DETAILED ACTION

The Amendment filed April 13, 2011 in response to the Office Action of January 13, 2011 is acknowledged and has been entered. Claims 11-13, 15-19, 29-31, 33-37, and 40 are withdrawn. Claims 1, 3-4, 9-10, 20, 22-23, 28, 45-46, 51-53 and 56 are under examination in this Office action.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Rejection of Claim 1 under 35 U.S.C. 103(a) as being unpatentable over Krasemann et al. (Journal of Immunological Methods, 1996, Vol. 199, p. 109-118) in view of Sigurdsson et al. (American Journal of Immunology, 2002, Vol. 161, p. 13-17) **is maintained.**

Rejection of Claims 20, 28, 51 and 52 are rejected under 35 U.S.C. 103(a) as being unpatentable over Krasemann et al. (Journal of Immunological Methods, 1996, Vol. 199, p. 109-118) in view of Sigurdsson et al. (American Journal of Immunology, 2002, Vol. 161, p. 13-17)as applied to claim 1 and further in view of Lu et al. (US Patent 5,733,760) and Chabalgoity et al. (Vaccine, 2001, Vol. 19, p. 460-469, in IDS of 11/18/2005) and Grones (Biochemical and Biophysical Research Communications, 1995, Vol. 206, p. 942-947) **is maintained.**

Rejection of Claims 9, 10 and 56 under 35 U.S.C. 103(a) as being unpatentable over Krasemann et al. (Journal of Immunological Methods, 1996, Vol. 199, p. 109-118) in view of Sigurdsson et al. (American Journal of Immunology, 2002, Vol. 161, p. 13-17) as applied to

claim 1 and further in view of Lu et al. (US Patent 5,733,760) and Chabalgoity et al. (Vaccine, 2001, Vol. 19, p. 460-469, in IDS of 11/18/2005) in view of Clemens et al. (US Patent 6,440,423 B1) and Kleanthous et al. (US Patent 6,585,975 B1) **is maintained.**

Response to Applicant's amendment

Applicant argues that Krasemann does not constitute prior art because he does not disclose immunization with prion protein but with prion DNA. Applicant argues that Krasemann does not teach a composition comprising a recombinant non-infectious nonpathogenic human prion protein but only teaches a composition comprising DNA expression vectors encoding prion proteins. Applicant argues that the whole point of the Kresmann article is that DNA immunization should be used in order to induce an effective immune response. Applicant argues that Krasemann teaches away from protein based immunogenic compositions because he teaches that immunization with prion proteins have been unsuccessful. Applicant argues that Sigurdsson does not teach that his CFA and IFA containing compositions could be administered mucosally without CFA or IFA to successfully induce a Th2-mediated mucosal immune response and that his composition was hardly effective with CFA or IFA. Applicant argues that the skilled artisan would have no reason to expect that Sigurdsson's composition would work better if administered mucosally.

Applicant argues that a limitation "suitable for mucosal administration" is a property of the claimed invention. Applicant argues that a further property of the claimed composition is that "when introduced to a mammal's mucosal immune system," it "elicit[s] a primarily Th-2-type immune response against an endogenous prion protein of said mammal that is associated with a mucosal IgA humoral immune response and any concomitant immunoglobulin counterpart in

other bodily fluids, and is not associated with a primarily Th-l-type cytotoxic T-lymphocyte response." Applicant argues that the present claims encompass only those non-infectious, non-pathogenic prion protein-containing compositions which can be administered mucosally and, after they are administered mucosally, induce a Th-2-type immune response (i.e., overcome mucosal tolerance) against an endogenous prion protein (PrP).

Applicant argues that the understanding in the field at the time of the present invention was that it is extremely difficult to create vaccine compositions which would overcome mucosal tolerance to antigens regarded by the immune system as self antigens, such as e.g., endogenous prion proteins. Applicant cites the reference by Czerkinsky et al. (Immunological Reviews, 1999, 170:197-222; attached as Exhibit A) which teaches that immunologic unresponsiveness (tolerance) is a key feature of the mucosal immune system, and deliberate vaccination or natural immunization by a mucosal route can effectively induce immune suppression."

Applicant argues that as disclosed in detail in the present specification, "suitable for mucosal administration" compositions recited in the present claims comprise delivery vehicles and carriers which allow to effectively overcome mucosal tolerance against an endogenous prion protein upon mucosal administration. See, e.g., paragraphs [0049-0071], [0077-0079], and Examples 1-4 of the application as published (U.S. Patent Publication No. 2007/0059807) and that the term "suitable for mucosal administration" as it applies to immunogenic compositions has a very clear meaning in the art. For example, as emphasized in 2005 review by Holmgren and Czerkinsky (Nature Medicine Supplement, 2005, 11(4):445-453; attached as Exhibit B).

In response to Applicant's arguments the Examiner notes that the present claims are product claims and not method claims. The composition claims that recite a property of the composition are inherently anticipated by the prior art disclosure of that composition; there is no requirement that the prior art appreciate or recognize the later-discovered property. However, claims to new uses of known processes or compositions are not inherently anticipated by prior art disclosure of the composition or process.

In the present case the recited property of the composition comprising prion protein is inherently anticipated by the prior art disclosure of that composition. A recitation of the intended use of the claimed invention must result in a structural difference between the claimed invention and the prior art in order to patentably distinguish the claimed invention from the prior art. See *In re Casey*, 152 USPQ 235 (CCPA 1967) and *In re Otto*, 136 USPQ 458, 459 (CCPA 1963).

The Examiner notes that Applicant's specification does not even provide evidence to support the claimed intended use of present composition or the result of immunization with the claimed composition such as "elicits a primarily Th-2 immune response associated with mucosal IgA humoral response". There are no working examples or figures in Applicant's specification that show generation of IgA humoral immune responses due to immunization of mice with the claimed composition. The fact that mucosal immunization typically results in generation of Th-2 type IgA humoral immune responses is well known in the art as evidenced by the reference by Cherkinsky, discussed by Applicant; however this is not necessarily the property of the claimed composition. The Examiner notes that Examiner has in fact considered the limitation of the intended use of the claimed composition because the Examiner withdrew the anticipation rejection over Sigurdsson 2002 (who teaches prion proteins for subcutaneous immunization) in

the Office action on 1/13/2011 and made a new rejection over Krasemann in view of Sigurdsson. The combination of those two references renders the present claims obvious as discussed on the record. Contrary to Applicant's assertions Krasemann teaches generation of antibodies against prion protein because he teaches that mouse antibodies reacted with the in vitro synthetized prion proteins (see page 115 under 3.6). Additionally Krasemann teaches an isolated prion protein used in the radioimmunoprecipitation assay, he teaches that prion proteins were synthetized in vitro in a rabbit reticulocyte and that prion-specific protein molecules were detected with molecular size of 31 kDa (see page 115 Figure 5 and figure description). It does not matter that Krasemann teaches immunization with prion DNA because the present claims are not drawn to methods of immunizing but to a product that comprises prion protein. Because Krasemann teaches isolated prion proteins Krasemann teaches the claimed invention.

Sigurdsson teaches a composition comprising an isolated non-infectious mouse prion protein and CFA adjuvant. As argued by Applicant in Remarks on 10/22/2010 CFA adjuvant is not used for mucosal administration. The present claims however recite an open claim language and do not recite any components of the composition that are used for mucosal administration and do not exclude the presence of an adjuvant. Both, Krasemann and Sigurdson disclose compositions comprising isolated non-infectious prion proteins. Based on the teachings in Krasemann and Sigurdson the skilled artisan would have been motivated to provide compositions comprising isolated non-infectious prion proteins with or without adjuvants. The isolated prion proteins disclosed in Krasemann and Sigurdson are structurally identical with the claimed prion proteins. As discussed above, Applicant's specification does not provide any evidence that the claimed composition results in generation of IgA antibody immune response,

and the recited properties of the claimed composition are only the characteristics of general mucosal immune responses as taught by Czerkinsky. Since the structure of the prior art non-infectious prion protein is identical with the structure of the claimed non-infectious prion protein the prior art meets the present claims. Applicant has not provided any arguments regarding the structural differences between the prior art compositions and the claimed composition. Applicant's argument about the specification describing compositions for mucosal administration is not found persuasive because none of the structural components of compositions for mucosal administration, such as for example the cholera toxin (discussed in Applicant's specification) are recited in the present claims.

In conclusion, Applicant did not provide any arguments regarding structural differences between the claimed composition and the composition in the prior art. Applicant's specification fails to provide evidence that the claimed composition induces IgA humoral immune responses. Since the prior art compositions and the claimed composition are structurally identical the prior art composition renders the present claims obvious and for this reason the rejection is maintained.

Conclusion

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after

the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to AGNIESZKA BOESEN whose telephone number is (571)272-8035. The examiner can normally be reached on 9:00 AM to 6:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Zachariah Lucas can be reached on 571-272-0905. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Agnieszka Boesen/
Primary Examiner, Art Unit 1648